

Remarks

Amendments to the Claims

Applicants respectfully request entry of the Amendments to the Claims set forth above in which Claims 1 and 12 have been amended and Claim 28 has been cancelled. Therefore, Claims 1–27, 29–36 and 64–77 remain pending in this Application. Claims 31–36 and 64–77 have been withdrawn from consideration. The amendments to Claim 1 are supported in the originally-filed specification at, for example, paragraphs [0060] through [0063], [0065] and [0126]. Claim 12 has been amended to correct a typographical error. These amendments do not introduce new matter.

Claim Rejections Under 35 U.S.C. § 102(b).

Claims 1–6, 9–13, 15–20 and 25–29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by European Patent Application Publication EP 0 858 101 A2 (“Aoyama”).

Independent Claim 1 has been amended to recite a combination of limitations, including,

contacting the single crystal Si structure with a surface active compound **during at least a portion of the cooling time period**, the surface active compound being selected from the group consisting of a silicon compound and a germanium compound [*emphasis added*]

The method disclosed in Aoyama at 7:17–29 clearly fails to disclose or suggest “contacting the single crystal Si structure with a surface active compound during at least a portion of the cooling time period”. Applicants respectfully submit that the portions of Aoyama cited by the Examiner do not disclose this limitation. Furthermore, not only does Aoyama fail to disclose the combination of limitations recited in amended Claim 1, but it would not be obvious to an ordinarily-skilled artisan to modify Aoyama’s method to meet the combination of limitations recited in amended Claim 1. In particular, an ordinarily-skilled artisan would have no motivation to modify Aoyama to continue the growth step during cooling because, for example, dynamic temperature fluctuations during cooling could detrimentally affect film uniformity and thickness. Benefits

associated with reducing the amount of deposition during the cooling period are disclosed in the originally-filed specification at, for example, paragraphs **[0116]** and **[0117]**.

Based on the foregoing, Applicants submit that Aoyama does not disclose all of the limitations recited in amended Claim 1, and therefore does not anticipate that claim. Therefore, Applicants respectfully request that this rejection be withdrawn. Furthermore, because Claims 2–6, 9–13, 15–20, 25–27 and 29 depend from independent Claim 1, and recite additional distinguishing features, Applicants submit that Claims 2–6, 9–13, 15–20, 25–27 and 29 are allowable for at least the same reasons that independent Claim 1 is allowable, and respectfully request that these rejections be withdrawn as well.

Claim Rejections Under 35 U.S.C. § 102(e).

Claims 1–6, 9–13, 15–20 and 25–29 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,875,279 (“Chu”).

Independent Claim 1 has been amended to recite a combination of limitations, including,

contacting the single crystal Si structure with a surface active compound **during at least a portion of the cooling time period**, the surface active compound being selected from the group consisting of a silicon compound and a germanium compound [*emphasis added*]

Clearly Chu contains no disclosure of this limitation. The method disclosed in Chu at 7:55–8:5 fails to disclose or suggest “contacting the single crystal Si structure with a surface active compound during at least a portion of the cooling time period”. Instead, Chu’s disclosure explicitly instructs to “[a]ctivate the Dichlorosilane (DCS) source, ... grow the Si epitaxial pre-layer”, and then “[c]ease DCS flow”. Only after ceasing the flow of dichlorosilane does Chu instruct to “activate cryogenic pump 40 and ... rapidly cool”.

Based on the foregoing, Applicants submit that Chu does not disclose all of the limitations recited in amended Claim 1, and therefore does not anticipate or render obvious that claim. Therefore, Applicants respectfully request that this rejection be

withdrawn. Furthermore, because Claims 2–6, 9–13, 15–20, 25–27 and 29 depend from independent Claim 1, and recite additional distinguishing features, Applicants submit that Claims 2–6, 9–13, 15–20, 25–27 and 29 are allowable for at least the same reasons that independent Claim 1 is allowable, and respectfully request that these rejections be withdrawn as well.

Claim Rejections Under 35 U.S.C. § 103(a) based on Aoyama.

Claims 7, 8, 14, 21–24 and 30 stand rejected as unpatentable over Aoyama. To establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art (see MPEP 2143.03). Applicants respectfully submit that the Examiner has failed to meet this burden because, for example, Aoyama does not disclose “contacting the single crystal Si structure with a surface active compound during at least a portion of the cooling time period”. The failure of Aoyama to disclose this limitation is discussed above.

Additionally, to establish that it would be obvious to modify the teachings of the prior art, the Examiner must point to some teaching, suggestion, or motivation to make such a modification. Applicants respectfully submit that the Examiner has failed to point to any teaching, suggestion or motivation to modify Aoyama’s technique to meet the recited combination of limitations, including “contacting the single crystal Si structure with a surface active compound during at least a portion of the cooling time period”. Finally, the prior art can be modified or combined to reject claims as *prima facie* obvious only if there is a reasonable expectation of success (see MPEP 2143.02). As Applicants have explained above, an ordinarily-skilled artisan would not expect that modifying Aoyama to continue the growth step during cooling would yield successful results because dynamic temperature fluctuations during cooling could detrimentally affect film uniformity and thickness. Benefits associated with reducing the amount of deposition during the cooling period are disclosed in the originally-filed specification at, for example, paragraphs [0116] and [0117].

Therefore, based on the foregoing, Applicants submit that Claims 7, 8, 14, 21–24 and 30 are allowable over Aoyama, and respectfully request that these rejections be withdrawn.

Claim Rejections Under 35 U.S.C. § 103(a) based on Chu.

Claims 7, 8, 14, 21–24 and 30 stand rejected as unpatentable over Chu. To establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art (see MPEP 2143.03). Applicants respectfully submit that the Examiner has failed to meet this burden because, for example, Chu does not disclose “contacting the single crystal Si structure with a surface active compound during at least a portion of the cooling time period”, as discussed above.

Additionally, to establish that it would be obvious to modify the teachings of the prior art, the Examiner must point to some teaching, suggestion, or motivation to make such a modification. Applicants respectfully submit that the Examiner has failed to point to any teaching, suggestion or motivation to modify Chu’s technique to meet the recited combination of limitations, including “contacting the single crystal Si structure with a surface active compound during at least a portion of the cooling time period”. Finally, the prior art can be modified or combined to reject claims as *prima facie* obvious only if there is a reasonable expectation of success (see MPEP 2143.02). As Applicants have explained above, an ordinarily-skilled artisan would not expect that modifying Chu to continue the growth step during cooling would yield successful results because dynamic temperature fluctuations during cooling could detrimentally affect film uniformity and thickness. Benefits associated with reducing the amount of deposition during the cooling period are disclosed in the originally-filed specification at, for example, paragraphs [0116] and [0117].

Therefore, based on the foregoing, Applicants submit that Claims 7, 8, 14, 21–24 and 30 are allowable over Chu, and respectfully request that these rejections be withdrawn.


Conclusion.

In view of the foregoing amendments, the Applicants submit that this application is in condition for allowance, and respectfully request the same. If, however, some issue remains that the Examiner feels can be addressed by an Examiner's Amendment, the Examiner is cordially invited to call the undersigned for authorization.

Respectfully submitted,

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